

# WEST Search History

DATE: Friday, December 20, 2002

| <u>Set Name</u>  | <u>Query</u>                 | <u>Hit Count</u> | <u>Set Name</u> |
|--|------------------------------|------------------|-----------------|
|  |                              |                  | result set      |
| <i>DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR</i> |                              |                  |                 |
| L5   | L4 same (nucleat\$4 or seed) | 2                | L5              |
| L4   | diamondoid same diamond      | 46               | L4              |
| L3   | L2 same diamond              | 66               | L3              |
| L2   | adamantane                   | 3945             | L2              |
| L1   | admantane                    | 52               | L1              |

END OF SEARCH HISTORY

(FILE 'HOME' ENTERED AT 09:20:31 ON 20 DEC 2002)

FILE 'CAPPLUS' ENTERED AT 09:20:38 ON 20 DEC 2002

L1        74 S ADAMANTANE (1P) DIAMOND  
L2        8 S L1 AND (SEED OR NUCLEAT?)

FILE 'STNGUIDE' ENTERED AT 09:26:50 ON 20 DEC 2002

FILE 'CAPPLUS' ENTERED AT 09:29:06 ON 20 DEC 2002

L3        17 S DIAMONDOID (1P) DIAMOND  
L4        0 S L3 AND (SEED OR NUCLEAT?)

=>

AN 1996:119465 CAPLUS

DN 124:216576

TI An investigation of the hydrogenation of aromatic hydrocarbons to yield saturated cycloalkanes: relevance to graphite-diamond transformation

AU Sen, Rahul; Sumathy, R.; Rao, C. N. R.

CS Solid State and Structural Chemistry Unit and Materials Research Centre, Indian Institute of Science, Bangalore, 560 012, India

SO THEOCHEM (1996), 361, 211-16  
CODEN: THEODJ; ISSN: 0166-1280

PB Elsevier

DT Journal

LA English

CC 75-7 (Crystallography and Liquid Crystals)

AB Step-wise hydrogenation of benzene, naphthalene and pyrene to yield the corresponding satd. derivs. was examd. at the AM1/RHF level to understand the graphite-**diamond** conversion in a H plasma. Hydrogenation of these aroms. proceeds readily with a negligible activation barrier, suggesting that satn. of a graphite surface by interaction with H atoms probably is very facile. Addn. of CH3.cndot. and C2H.cndot. radicals to a partially satd. hydrocarbon yields **adamantane**, which can act as the **nucleation** site for **diamond** growth, a situation that also obtained with partially hydrogenated graphite.

ST arom hydrocarbon hydrogenation graphite diamond transition;

IT **nucleation** diamond graphite hydrogenation arom hydrocarbonIT Crystal **nucleation**

(of diamond on graphite and relevance of hydrogenation of arom. hydrocarbons to satd. cycloalkanes)

IT 281-23-2P, **Adamantane**RL: PNU (Preparation, unclassified); PREP (Preparation)  
(formation from cyclohexane having 2 Me groups and ethynyl group and relevance to graphite-**diamond** transition)

IT 7782-42-5, Graphite, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(hydrogenation of arom. hydrocarbons to satd. cycloalkanes and relevance to graphite-diamond transformation)

IT 7782-40-3P, Diamond, preparation

RL: PNU (Preparation, unclassified); PREP (Preparation)  
(hydrogenation of arom. hydrocarbons to satd. cycloalkanes and relevance to graphite-diamond transformation)

IT 71-43-2, Benzene, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(hydrogenation to cyclohexane and relevance to graphite-diamond transition)

IT 91-20-3, Naphthalene, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(hydrogenation to decalin and relevance to graphite-diamond transition)

IT 3170-58-9, Cyclohexyl

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with Me and relevance to graphite-diamond transition)

IT 2229-07-4, Methyl

RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction with cyclohexyl and relevance to graphite-diamond transitiio

AN 1994:460597 CAPLUS

DN 121:60597

TI Using zeolites as substrates for diamond thin film deposition

AU Kwan, Michael C.; Gleason, Karen K.

CS Dep. Chem. Eng., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA

SO Materials Research Society Symposium Proceedings (1994), 317(Mechanisms of

Thin Film Evolution), 523-8

CODEN: MRSPDH; ISSN: 0272-9172

DT Journal

LA English

CC 49-1 (Industrial Inorganic Chemicals)

AB Zeolites have been used as a potential substrate for CVD **diamond** deposition. By satg. the pore channels of a silicalite crystal, which are spaced approx. 10 .ANG. apart, with hydrocarbon seeds to induce and control **nucleation**, films have been grown in a hot filament chem. vapor deposition (HFCVD) system under std. deposition conditions, using acetone as the carbon source. The hydrocarbons used were **adamantane**, naphthalene, anthracene, 2,3-benzanthracene, and 1,2:5,6-dibenzanthracene. To enhance **nucleation**, a high pressure pre-deposition period was used initially. Characterization of these films through electron diffraction and Auger electron spectroscopy indicates that polycryst. .beta.-SiC imbedded in an amorphous matrix is initially formed and large, well faceted **diamond** crystals are subsequently **nucleated**.

ST zeolites substrate diamond thin film deposition

IT Zeolites, uses

RL: USES (Uses)

(silicalite, substrates, for diamond thin film deposition)

IT 7782-40-3P, Diamond, preparation

RL: PREP (Preparation)

(deposition of thin-film, with zeolites as substrates)

IT 53-70-3, 1,2:5,6-Dibenzanthracene 91-20-3, Naphthalene, uses 92-24-0, 2,3-Benzanthracene 120-12-7, Anthracene, uses 281-23-2,

**Adamantane**

RL: USES (Uses)

(in **diamond** thin film deposition on zeolite substrates)

L2 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2002 ACS  
AN 1990:129650 CAPLUS  
DN 112:129650  
TI Formation of diamond films  
IN Hotsuta, Hajime; Yamamoto, Sadaaki; Ruisu, Robaato Marukomu  
PA Research Development Corp. of Japan, Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM C30B029-04  
CC 75-1 (Crystallography and Liquid Crystals)  
FAN.CNT 1

|    | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|----|-------------|------|----------|-----------------|----------|
| PI | JP 01103991 | A2   | 19890421 | JP 1987-260129  | 19871015 |

AB The title method comprises modification of the substrate surface with tricyclo[3.3.1.13,7] decane or its deriv. for control of nucleation. An .alpha.-Zr(HPO<sub>4</sub>)<sub>2</sub>.H<sub>2</sub>O single-crystal substrate was immersed in an aq. soln. of 1-tricyclo[3.3.1.13,7] decane amine for 24 h for equil. adsorption on the substrate. The substrate was washed and dried. Chem. modification of the substrate surface was confirmed by attenuated total reflection IR absorption spectra, and the diamond film was deposited by evapn. of graphite using a KrF excimer laser beam.

ST diamond deposition modified substrate surface;  
adamantane adsorption modified substrate surface

IT 281-23-2, Adamantane 768-94-5, Tricyclo[3.3.1.13,7]decan-1-amine 2094-72-6 24886-73-5

RL: PRP (Properties)  
(surface modification of substrates by adsorption of, for vapor-phase deposition of diamond)

IT 7782-40-3, Diamond, uses and miscellaneous

RL: USES (Uses)  
(vapor-phase deposition of, on substrate surface modified by adsorption

AN 1999:455038 CAPLUS

DN 131:123158

TI Crystal growth of CVD diamond and some of its peculiarities

AU Niekarczyk, W.

CS Institute Physics, Polish Academy Sciences, Warsaw, 02668, Pol.

SO Crystal Research and Technology (1999), 34(5-6), 553-563

CODEN: CRTEDF; ISSN: 0232-1300

PB Wiley-VCH Verlag Berlin GmbH

DT Journal

LA English

CC 75-1 (Crystallography and Liquid Crystals)

Section cross-reference(s): 69

AB Expts. demonstrate that CVD **diamond** can form in gas environments that are C-undersatd. with respect to **diamond**. This fact is, among others, the most serious violation of principles of chem. thermodyn. None of the principles is broken when CVD **diamond** formation is considered not a phys. process consisting in growth of crystals but a chem. process consisting in accretion of macromols. of polycyclic satd. hydrocarbons belonging to the family of org. compds. the smallest representatives of which are **adamantane**, diamantane, triamantane etc. Since the polymantane macromols. are in every respect identical with **diamond** single crystals with H-terminated surfaces, the accretion of polymantane macromols. is a process completely equiv. to the growth of **diamond** crystals. However, the accretion of macromols. must be described in a way different from that used to describe the growth of crystals because some thermodyn. functions are defined in manners different for solid phases (i.e. crystals) and for mols. The CVD **diamond** formation is a chem. process proceeding on surfaces of polymantane **seed** macromols. (**diamond seed** crystals) under conditions under which the H-terminated surfaces exist but are chem. unstable. The process consists of several cyclically recurring consecutive reactions that can be thermodynamically coupled. The present approach makes it possible to predict correlations between the growth rate as well as the phase compn. of deposited films and some important process variables. The predicted dependencies are perfectly consistent with exptl. results.

ST diamond CVD crystal growth

IT Vapor deposition process

(chem.; crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT Crystal growth

Thermodynamics

(crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT Hydrocarbons, processes

RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(polymantanes; crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

IT 7782-40-3, Diamond, properties

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(crystal growth of CVD diamond thermodynamically explained as accretion of polymantane macromols.)

RE.CNT 37 THERE ARE 37 CITED REFERENCES AVAILABLE FOR THIS RECORD

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